# UNIX PRINTING SYSTEM

# DRAFT - CUPS Software Users Manual

CUPS-SUM-1.0.0b1

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# Preface

This software users manual describes how to use the Common UNIX Printing System ("CUPS") Version 1.0.0.

## System Overview

The Common UNIX Printing System provides a portable printing layer for UNIX® operating systems. It has been developed by Easy Software Products to promote a standard printing solution for all UNIX vendors and users. CUPS provides the System V and Berkeley command-line interfaces.

CUPS uses the Internet Printing Protocol (IETF-IPP) as the basis for managing print jobs and queues. The Line Printer Daemon (LPD, RFC1179), Server Message Block (SMB), and AppSocket protocols are also supported with reduced functionality.

CUPS adds network printer browsing and PostScript Printer Description ("PPD")-based printing options to support real world applications under UNIX.

## Document Overview

This software users manual is organized into the following sections:

- 1 - Printing System Overview
- 2 - Using the Printing System

- 3 - Standard Printer Options
- 4 - Checking the Status Via the Web

# 1 - Printing System Overview

This chapter provides an overview of how the Common UNIX Printing System works.

## The Printing Problem

For years *the printing problem* has plagued UNIX®. Unlike Microsoft® Windows® or MacOS, UNIX has no standard interface or system in place for supporting printers. Among the solutions previously available, the Berkeley and System V printing systems are the most prevalent.

These printing systems support line printers (text only) or PostScript printers (text and graphics), and with some coaxing they can be made to support a full range of printers and file formats. However, because each varient of the UNIX operating system uses a different printing system than the next, developing printer drivers for a wide range of printers is extremely difficult. That combined with the limited volume of customers for each UNIX varient has forced most printer vendors to give up supporting UNIX entirely.

The Common UNIX Printing System, or CUPS, is designed to eliminate *the printing problem*. One common printing system can be used by all UNIX varients to support the printing needs of users. Printer vendors can use its modular filter interface to develop a single driver program that supports a wide range of file formats with little or no effort. Since CUPS provides both the System V and Berkeley printing commands, users (and applications) can reap the benefits of this new technology with no changes.

# The Technology

CUPS is based upon an emerging Internet standard called the Internet Printing Protocol, or IPP. IPP has been embraced by dozens of printer and printer server manufacturers, and will be supported by the next Microsoft Windows operating system.

IPP defines a standard protocol for printing as well as managing print jobs and printer options like media size, resolution, and so forth. Like all IP-based protocols, IPP can be used locally or over the Internet to printers hundreds or thousands of miles away. Unlike other protocols, however, IPP also supports access control, authentication, and encryption, making it a much more secure printing solution than older ones.

IPP is layered on top of the Hyper-Text Transport Protocol, or HTTP, which is the basis of web servers on the Internet. This allows the user to view documentation and status information on a printer or server using their web browser.

CUPS provides a complete IPP/1.0-based printing system that provides Basic authentication and domain or IP-based access control. Digest authentication and TLS encryption will be available in future versions of CUPS.

# Filters

Filters allow a user or application to print many types of files without extra effort. Print jobs sent to a CUPS server are filtered before sending them to a printer. Some filters convert job files to different formats that the printer can understand. Others perform page selection and ordering tasks. *Backend* filters perform the most important task of all - they send the filtered print data to the printer.

CUPS provides filters for printing many types of image files, HP-GL/2 files, PDF files, and text files. CUPS also supplies PostScript and image file Raster Image Processors, or RIPs, that convert PostScript or image files into bitmaps that can be sent to a raster printer.

CUPS provides backends for printing over parallel and serial ports, and over the network via the JetDirect (AppSocket), Server Message Block, and Line Printer Daemon protocols.

# Printer Drivers

Printer drivers in CUPS consist of one of more filters specific to a printer. CUPS includes a sample printer driver for Hewlett-Packard LaserJet and DeskJet printers. While this driver does not generate optimal output for different printer models, it does demonstrate how you can write your own printer drivers and incorporate them into CUPS.

# 2 - Using the Printing System

**Choosing a Printer**

**Setting Printer Options**

**Submitting Files for Printing**

**Checking the Printer Status**

# 3 - Standard Printer Options

# 4 - Checking the Status Via the Web